

REMARKS

The Examiner's Final Action mailed on November 5, 2002 has been received and its contents carefully considered.

In this Amendment, Applicant has amended claim 24 and canceled claim 25. Claims 1, 24 and 26 are the independent claims. Claims 1~13, 24 and 26 remain pending in the application. For at least the following reasons, it is submitted that this application is in condition for allowance.

Initially, it is noted that this Amendment has been prepared using the requested new format. If there are any irregularities in this format, it would be greatly appreciated if Applicant's Counsel would be so advised.

The Examiner has rejected claims 1~4, 7, 8, 11 and 12 as being anticipated by *Yamashita et al.* (USP 5,726,493). It is submitted that these claims are patentably distinguishable over the cited reference for at least the following reasons.

It is well settled that a reference may anticipate a claim within the purview of 35 U.S.C. § 102 only if all the features and all the relationships recited in the claim are taught by the referenced structure either by clear disclosure or under the principle of inherency.

Applicant's independent claim 1 recites that the conductive wire has an exposed end which is substantially level with a top surface of the resin layer. This claimed configuration results in a structure that allows the solder balls to be stably arranged.

The Examiner has acknowledged Applicant's previous arguments that *Yamashita et al.* do not disclose this feature. These previous arguments were directed to the embodiments shown in Figures 2, 4, 7, 8 and 10 of *Yamashita et al.*, each of

which discloses electrode members 17 which have top ends which protrude from a sealing resin 16. The Examiner's attention is particularly directed to column 6, lines 1-4 and column 7, lines 19-21 of this reference, where this reference discloses that this configuration allows for the electrode members 17 to be electrically connected to outer terminals outside of the sealing resin 16. The Examiner's attention is also directed to the discussion of the embodiments shown in Figures 7, 8 and 10, where this reference teaches that the heat release member 41, 51 is provided with penetration holes for receiving the portion of the electrode members 17 that extends above the sealing resin (see column 8, line 58 through column 9, line 7; column 9, lines 48-54; and column 10, lines 7-12). As is apparent from these noted passages, this reference specifically provides that, for these embodiments, the exposed ends of the electrode members 17 are not level with the upper surface of the resin layer.

However, the Examiner's Action now relies on the embodiment shown in Figure 3, and asserts that this embodiment teaches electrodes being level with the upper surface of the sealing resin. However, it is respectfully submitted that a careful reading of this patent with regard to this embodiment, and a study of the Figure 3, will reveal that this patent does NOT disclose this alleged feature.

In particular, this embodiment discloses that the exposed ends of the electrode members 22 are well below, i.e., recessed relative to, the upper surface of the resin layer. An enlarged Figure 3 has been provided for the Examiner's convenience, to better illustrate this aspect of this patent. In this embodiment, the electrodes 17 have been replaced with the electrodes 22. This reference specifically discloses that the electrode members 22 "do not protrude from the sealing resin 16 but are positioned in

the holes 23 formed in the sealing resin" (see column 6, lines 38-47). In order to accomplish this, an etching treatment is performed to remove a predetermined amount (which corresponds to a depth of the hole 23) of the electrode members 22 (see column 6, lines 52-55).

This reference also teaches that the electrodes must either project above the upper surface of the resin 16 (in the manner of electrodes 17), or be recessed below the upper surface of the resin 16 (in the manner of the electrodes 22), for various reasons, including allowing the protruding portions of the electrodes 17 to be received within the holes 23 disposed over the electrodes 22, to facilitate a stacking of the semiconductor devices (see column 11, lines 6-29, and Figures 13 and 14). Thus, not only does this reference not disclose Applicant's claimed configuration, but this reference specifically teaches away from modifying the electrode members 17, 22 so that the electrode members 17, 22 would have an exposed end which is substantially level with a top of the sealing resin 16.

As such, it is submitted that Applicant's independent claim 1, and the claims dependent therefrom, are *prima facie* patentably distinguishable over the cited reference. It is thus requested that these claims be allowed and that this rejection be withdrawn.

The Examiner has further rejected claims 5, 6, 9, 10 and 13 as being obvious over *Yamashita et al.* and further in view of *Aiba et al.* (USP 6,348,728). Because claims 5, 6, 9, 10 and 13 depend from independent claim 1, and because *Aiba et al.* do not overcome the above-noted deficiencies of *Yamashita et al.*, and further in view of the fact that *Yamashita et al.* teach away from modifying the electrode members 17, 22

in a manner similar to the structure required by Applicant's independent claim 1, it is submitted that these claims are patentably distinguishable over the cited references for at least the same reasons as independent claim 1, from which these claims depend, as well as for the additional features recited therein. It is thus requested that this rejection be withdrawn and that these claims be allowed.

The Examiner has rejected claims 24 and 25 as being obvious over Yamashita *et al.* and further in view of Aiba *et al.* Because claim 25 has been cancelled, and the subject matter recited therein incorporated into claim 24, Applicant will treat this rejection as pertaining only to claim 24. It is submitted that this claim is patentably distinguishable over the cited combination of references for at least the following reasons.

Applicant's independent claim 24 recites a semiconductor package which has a wiring pattern that includes a plurality of first wirings and a plurality of second wirings. The first wirings are disposed closer to a center of the semiconductor package than the second wirings are. The second wirings are disposed closer toward a periphery of the semiconductor package than the first wirings are. Further, this claim recites that the first wirings and the second wirings are alternatingly arranged.

This configuration allows the first wirings to be electrically connected to external terminals at a location that is near to the center of the semiconductor package, and allows the second wirings to be electrically connected to external terminals at a location that is near to peripheral portions of the semiconductor package. Thus, this configuration allows solder balls, for example, to be arranged without contacting one another, which may otherwise cause shorts. Further, this configuration ensures that

there is adequate spacing between the solder balls, for example, arranged on the wiring patterns, thereby preventing the solder balls from contacting each other.

The Examiner's Action states that *Aiba et al.* disclose one wiring that is closer to a center of the package and another wiring that is closer to a periphery of the package. The Examiner's Action also states that these wirings are alternately arranged, and refers to Figure 5B, and the features provided with the reference numbers 18a, 18b.

However, a careful reading of this patent reveals that the features 18a are elongated wiring patterns which are arranged in the horizontal and vertical patterns shown in Figure 5A. The features 18b are lands, which are disposed over the wiring patterns 18a. However, none of these features, to the extent that they qualify as first and second wiring patterns, are alternately arranged, as recited in claim 24. Instead, both the lands 18b and the wiring patterns 18a are evenly arranged, so that there is no alternating arrangement therebetween. Further, the lands 18b are disposed on the wiring patterns 18a, so that these features are not alternately arranged relative to each other. As such, it is submitted that Applicant's independent claim 24 is patentably distinguishable over the cited references, and it is requested that this rejection be withdrawn, and that this claim be allowed.

The Examiner has rejected claim 26 as being obvious over *Yamashita et al.* and further in view of *Aiba et al.* It is submitted that this claim is patentably distinguishable over the cited combination of references for at least the following reasons.

Independent claim 26 recites that a wiring pattern is provided which is comprised of Cu, and a second electrode is formed on the wiring pattern with the second electrode including an Ni layer in electrical connection with the wiring pattern, and an Au layer

disposed on the Ni layer. In this structure, the Ni layer prevents inter-diffusion of Cu in the wiring pattern and Au in the second electrode.

The Examiner's Action acknowledges that the cited references do not disclose this claimed feature, but takes official notice that such subject matter is well known in the art.

However, Applicant hereby traverses such assertion. Applicant has provided advantages of this claimed configuration, which substantiates Applicant's assertion that the claimed combination is non-obvious. The Examiner is thus requested to provide a reference that teaches these missing features, and which provides motivation for one skilled in the art to modify the primary references in a manner that would render Applicant's claimed invention obvious. Alternatively, if the Examiner is relying on facts within his own knowledge and expertise, it is hereby requested that the Examiner provide an affidavit providing sufficient facts to support this rejection. Otherwise, it is requested that this rejection be withdrawn, and that this claim be allowed.

It is submitted that this application is in condition for allowance. Such action and the passing of this case to issue are requested.

Should the Examiner feel that a conference would help to expedite the prosecution of the application, the Examiner is hereby invited to contact the undersigned counsel to arrange for such an interview.

Respectfully submitted,



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Date

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